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Notes:

1. Untranslatable words are replaced with asterisks (***).
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Dictionary: Last updated 03/10/2009 / Priority: 1. Mechanical engineering / 2. Manufacturing/Quality / 3. Technical term

FULL CONTENTS

[Claim(s)]

[Claim 1] The sleeve which assumed the abbreviation tubed by which outer fitting is carried out to the perimeter of the strand with which a drawbar pull is given towards the inboard of stationary-portion material, This sleeve and the wedge which assumed the wedge shape pressed fit between said strands, [being pushed against the outside surface of said stationary-portion material through an anchor plate, or it provides and said sleeve is directly forced on the outside surface of said stationary-portion material] Are said strand the strand anchorage device fixed to said stationary-portion material, and [said sleeve] The strand anchorage device characterized by being constituted combining the approximately cylindrical and thick main material formed with resin, a ceramic, or concrete, the metal inner circumference metal cylinder arranged all over the inner skin of this main material, and the metal perimeter metal cylinder arranged all over the peripheral face of said main material.

[Claim 2] In the strand anchorage device of Claim 1, [the peripheral face of said main material] The strand anchorage device characterized by having been prepared in the shape of [in which an outside diameter narrows towards a different side from the side in which said wedge is inserted] a taper, and for the diameter dimension having narrowed and preparing it towards a different side from the side in which said wedge is inserted so that said perimeter metal cylinder may also be in agreement with the peripheral face of said main material.

[Claim 3] The strand anchorage device characterized by covering the peripheral end face by the side of said anchor plate of said perimeter metal cylinder to said anchor plate, and forming in it the tapered surface which binds the peripheral end face tight to the inner circumference side in the strand anchorage device of Claim 2.

[Claim 4] The strand anchorage device characterized by arranging the head plate of the shape of a metal ring fixed to the end face of the side in which said wedge in said main material is inserted with said inner circumference metal cylinder in the strand anchorage device of either Claim 1 - Claim 3.

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates the strand (steel wire) with which a drawbar pull is given towards the inboard of stationary-portion material to the strand anchorage device for being fixed to

stationary-portion material.

[0002]

[Description of the Prior Art] The conventional strand anchorage device is explained with reference to drawing 4 . the conventional strand anchorage device is arranged at the outside surface side of the stationary-portion material J1 (peds, such as concrete) -- stationary-portion material J1 Strand J2 with which a drawbar pull is given towards inboard Sleeve J3 which assumed the abbreviation tubed by which outer fitting is carried out to the perimeter this sleeve J3 Strand J2 Wedge J4 which assumed the wedge shape pressed fit in between sleeve J3 Stationary-portion material J1 being arranged in between -- strand J2 from -- sleeve J3 distributing the force in which it is added -- stationary-portion material J1 Anchor plate J5 which tells from -- it is constituted.

[0003]

[Problem to be solved by the invention] sleeve J3 **** -- strand J2 Wedge J4 from -- high reinforcement is required in order to add the excessive force. Therefore, the conventional sleeve J3 It is formed with a hard metal which consists of iron system steel, stainless steel, etc., it cuts to a pure hard metal, and is a sleeve J3. It formed. That is, sleeve J3 About an inner surface, it is a wedge J4 at least. It is necessary to cut to the taper for pressing fit, it cuts to a hard metal, and is a sleeve J3. Since it formed, it is a sleeve J3. It had become what has a very high unit price. For this reason, it had also become the factor which makes the cost of the structure which uses many strand anchorage devices, for example raise.

[0004]

[Objects of the Invention] This invention was made in view of the above-mentioned situation, and [the object] While being able to respond a sleeve to the excessive force given from a strand and a wedge The excessive force given to the sleeve can be stabilized and told to the member (an anchor plate and stationary-portion material) which contacts a sleeve, and it is in offer of the strand anchorage device which can hold down the cost of a sleeve low further.

[0005]

[Means for solving problem] [Means of Claim 1] The strand anchorage device which adopts the means of Claim 1 is constituted by the approximately cylindrical and thick main material in which the sleeve is formed with resin, a ceramic, or concrete, an inner circumference metal cylinder, and the perimeter metal cylinder. For this reason, the excessive force given from a strand and a wedge is given to the main material formed with resin, a ceramic, or concrete from an inner circumference metal cylinder. The nonconformity to which a main material spreads in an outside diameter direction according to the excessive force given to a main material from an inner circumference metal cylinder since the perimeter is covered with the perimeter metal cylinder does not generate the main material, but breakage of a main material is prevented. That is, breakage of a sleeve is prevented. And the excessive force given to the sleeve is told to the member (an anchor plate and stationary-portion material) which contacts a sleeve from the main material in a sleeve, and a perimeter metal cylinder.

[0006] As mentioned above, even if the approximately cylindrical and thick main material formed with resin, a ceramic, or concrete, an inner circumference metal cylinder, and a perimeter metal cylinder constitute the sleeve in a strand anchorage device, reinforcement equivalent to the former can be obtained without causing breakage. And the main material which constitutes a sleeve is formed with resin, a ceramic, or concrete, can be formed in the predetermined configuration where it was easily suitable for the main material with die output, and can be produced at low cost. Moreover, since it ends with metal cutting of a raw material (resin) softer than before even when cutting not die output but resin

and forming a main material, productivity is very excellent. That is, it becomes possible to hold down the production cost of a main material inexpensive. On the other hand, an inner circumference metal cylinder and a perimeter metal cylinder can be formed by the cut of metal pipes, and also when it attaches a taper, they can be inexpensive processed by reducing work. Thus, since a sleeve can constitute with an inexpensive main material, an inner circumference metal cylinder, and a perimeter metal cylinder, cost can be lowered from the conventional sleeve. As a result, it is useful to reduce the cost of the structure which can reduce the cost of a strand anchorage device, for example, uses many strand anchorage devices.

[0007] [Means of Claim 2] while adopting the means of Claim 2 and establishing the peripheral face of a main material in the shape of [in which an outside diameter narrows towards the side which contacts an anchor plate (or stationary-portion material)] a taper Many of force given to the sleeve from the strand is given to a perimeter metal cylinder by preparing so that the inner skin of a perimeter metal cylinder may also be in agreement with the peripheral face of a main material. [as a result, the excessive force given to the sleeve from the strand and the wedge] The load which will be told to an anchor plate (or stationary-portion material) from the perimeter metal cylinder which demonstrates high reinforcement to high load, and is directly told from the end face of a main material to an anchor plate (or stationary-portion material) decreases, and the breakage-proof nature of a main material improves.

[0008] [Means of Claim 3] by having adopted the means of Claim 3, having covered the peripheral end face of the perimeter metal cylinder inside the anchor plate, and having formed in it the tapered surface which binds the peripheral end face tight to the inner circumference side The tapered surface of an anchor plate receives a part of load (force which mainly spreads in an outside diameter direction) given to a perimeter metal cylinder from a main material. As a result, the breakage-proof nature of a sleeve improves.

[0009] [Means of Claim 4] By having adopted the means of Claim 4 and having placed the head metal ring-like plate in a fixed position to the end face of the main material of the side in which a wedge is inserted, it is stopped that the end face of the main material of the side in which a wedge is inserted bulges by the excessive force, and the breakage-proof nature of a main material improves as a result.

[0010]

[Mode for carrying out the invention] The form of operation of this invention is explained using a work example and a modification.

The [1st work example] With reference to drawing 1 and drawing 2 , the configuration of the strand anchorage device in this work example is explained. [a strand anchorage device / the strand S (wire formed by twisting two or more music wires) with which a strong drawbar pull is given towards the inboard of the stationary-portion material K (peds, such as concrete)] It is an apparatus for being fixed to the stationary-portion material K, and consists of a sleeve 1, a wedge 2, and an anchor plate 3.

[0011] A sleeve 1 is that which assumed the abbreviation tubed by which outer fitting is carried out to the perimeter of Strand S, and is mentioned later for details. The shape of a wedge shape pressed fit between the Sleeve 1 and Strand S with which outer fitting of the wedge 2 was carried out to Strand S It is the thing [*****] which assumed (the abbreviation cone cone configuration which the hole which inserts Strand S in a core specifically opened), for example, with a hard metal ingredient like iron system steel, it divides like two division or quadrisection and is prepared. An anchor plate 3 intervenes between a sleeve 1 and the stationary-portion material K. The force in which it is added to the stationary-portion material K from a sleeve 1 is distributed, and it prevents a stress concentration's occurring in the

stationary-portion material K, and damaging the stationary-portion material K, and is prepared with the thick tabular metal ingredient with which the hole to insert [****] in Strand S in the center was formed. [0012] Next, a sleeve 1 is explained. It pastes up combining a main material 4, the inner circumference metal cylinder 5, the perimeter metal cylinder 6, and the head plate 7, and a sleeve 1 is inexpensive and lighter-weight than the conventional sleeve 1. In addition, although this work example shows the example which pastes up and uses the components which constitute a sleeve 1, it could paste up or you may use in the condition of having accepted the part and having pasted up.

[0013] A main material 4 is formed with the small resin, the ceramic, or the concrete of deformation to high load. If a concrete example is shown, a main material 4 will cut a fiber-reinforced plastic in a suitable configuration. In addition, although the fiber mixed is for suppressing the deformation (creep) by long-time loading small and the polyester fiber which the glass fiber mixed as an example is shown, it cannot be overemphasized that other fiber may be used. Moreover, although phenol and nylon are shown as an example of resin, it cannot be overemphasized that resin with hard others may be used.

[0014] As a main material 4 is shown in the sectional view of drawing 2 (c), it is the thick thing which assumed abbreviation tubed, and inner skin 4a is formed in the taper with which a bore narrows towards graphic display down, in order to receive press fit of a wedge 2 through the inner circumference metal cylinder 5. Moreover, the peripheral face 4b of the main material 4 is also established in the taper with which an outside diameter narrows towards the graphic display bottom (a different side from the side in which a wedge 2 is inserted). The taper angle of this peripheral face 4b is established smaller than the taper angle of inner skin 4a.

[0015] As shown in the sectional view of drawing 2 (a), the inner circumference metal cylinder 5 is formed all over the inner circumference of a main material 4 so that it may be in agreement with the inner skin 4a of a main material 4, and is narrowed and prepared in graphic display down. After cutting an iron system steel pipe and stainless steel tubing to suitable die length (thickness of the die-length + head plate 7 of a main material 4), this inner circumference metal cylinder 5 performs reducing work, and is formed.

[0016] As shown in the sectional view of drawing 2 (d), the perimeter metal cylinder 6 is formed all over the perimeter of a main material 4 so that it may be in agreement with the peripheral face 4b of a main material 4, and is narrowed and prepared in graphic display down. Like the inner circumference metal cylinder 5 mentioned above, after cutting an iron system steel pipe and stainless steel tubing to suitable die length (thickness of the die-length + head plate 7 of a main material 4), this perimeter metal cylinder 6 performs reducing work, and is formed.

[0017] It is arranged at the end face (on drawing 1) of the side in which the wedge 2 in a main material 4 is inserted, and is fixed in the condition of having been pushed against the main material 4 with the inner circumference metal cylinder 5, and the head plate 7 prevents a main material 4 carrying out swell deformation to the end-face side according to the load added to a main material 4. As shown in the sectional view of drawing 2 (b), this head plate 7 assumes a ring disc configuration, and pierces and processes the iron system sheet steel and a stainless plate into a suitable ring plate configuration. In addition, the taper which is in agreement with the perimeter upper bed of the inner circumference metal cylinder 5 is formed in the hole 7a inside the head plate 7. For this reason, the load of a wedge 2 is told to the head plate 7 through the inner circumference metal cylinder 5, and the head plate 7 has a configuration firmly fixed in the condition of having been pushed against the main material 4.

[0018] [Actuation of the 1st work example] By pressing a wedge 2 fit in a sleeve 1 in the state of

drawing 1 , the bore of a wedge 2 becomes small and the wedge 2 pressed fit in the sleeve 1 holds Strand S firmly. If the force (drawbar pull) in which Strand S is pulled inside the stationary-portion material K is added to a wedge 2, the drawbar pull will turn into force which presses a wedge 2 fit in a sleeve 1. For this reason, since it will become the big force in which the drawbar pull added to that strand S presses a wedge 2 fit in a sleeve 1 if a big drawbar pull is added to Strand S, the fastening force of Strand S becomes firm. Thus, a big drawbar pull is added to a sleeve 1 from Strand S, the drawbar pull is told to the sleeve 1 -> anchor-plate 3 -> stationary-portion material K, and it is fixed to the stationary-portion material K by the amount of [with the sleeve 1 in Strand S] bonding link as a result.

[0019] [Effectiveness of the 1st work example] The main material 4 which the sleeve 1 which constitutes a strand anchorage device becomes with resin, a ceramic, or concrete as shown above, The excessive force which is constituted by the inner circumference metal cylinder 5 and the perimeter metal cylinder 6 into which the metal pipe was processed, and is given from Strand S and a wedge 2 is given to a main material 4 from the inner circumference metal cylinder 5. And the nonconformity to which a main material 4 spreads in an outside diameter direction according to the excessive force given to a main material 4 from the inner circumference metal cylinder 5 since the perimeter is covered with the perimeter metal cylinder 6 does not generate a main material 4, but breakage of a main material 4 is prevented. That is, even if the main material 4 which consists of resin, a ceramic, or concrete, the inner circumference metal cylinder 5, and the perimeter metal cylinder 6 constitute a sleeve 1, reinforcement equivalent to the former can be obtained, without causing breakage.

[0020] And the main material 4 which constitutes a sleeve 1 is inexpensive producible by die output by being made from resin, a ceramic, or concrete. Moreover, since it ends with metal cutting of a raw material (resin) softer than before when using resin, productivity is very excellent and can produce inexpensive. On the other hand, the inner circumference metal cylinder 5 and the perimeter metal cylinder 6 are inexpensive producible with the cut of metal pipes, and the reducing work which attaches a taper. Moreover, the head plate 7 is also pierced and it can produce inexpensive by processing. Thus, since a sleeve 1 can constitute with the inexpensive main material 4, the inner circumference metal cylinder 5, the perimeter metal cylinder 6, and the head plate 7, cost can be lowered from the conventional sleeve 1 to about 1/5. As a result, the cost of a strand anchorage device can be reduced and it is useful to reduce the cost of the building which uses many strand anchorage devices.

[0021] Moreover, since it prepared in the taper with which the peripheral face 4b and the perimeter metal cylinder 6 of a main material 4 are turned to the anchor-plate 3 side, and an outside diameter narrows, the drawbar pull given to the main material 4 from Strand S is given to the perimeter metal cylinder 6 from the tapered surface of the peripheral face 4b of a main material 4. [as a result, the excessive force given to the sleeve 1 from Strand S and the wedge 2] The load which will be told to an anchor plate 3 (or stationary-portion material K) from the perimeter metal cylinder 6 which demonstrates high reinforcement to high load, and is directly told from the end face of a main material 4 to an anchor plate 3 decreases, and the breakage-proof nature of a main material 4 improves.

[0022] Furthermore, in this work example, the head plate 7 is placed in a fixed position to the end face of the main material 4 of the side in which a wedge 2 is inserted, and since the end face of the main material 4 is stopping bulging by the excessive force, the breakage-proof nature of a main material 4 is improving.

[0023] The [2nd work example] The 2nd work example is explained with reference to drawing 3 . This 2nd work example forms the tapered surface 3a which covers the peripheral end face of the perimeter

metal cylinder 6 to the center portion of an anchor plate 3, and binds that peripheral end face tight to it, and it is established so that the end face by the side of the stationary-portion material K of a sleeve 1 may separate a clearance to the stationary-portion material K. Thus, by having prepared, the tapered surface 3a of an anchor plate 3 will receive a part of load (force which mainly spreads in an outside diameter direction) given to the perimeter metal cylinder 6 from a main material 4.

[0024] As for the force given to a sleeve 1 from Strand S and a wedge 2, the anchor-plate 3 side becomes large rather than the loading slot of a wedge 2. For this reason, the tapered surface 3a of an anchor plate 3 will receive the load given to the perimeter metal cylinder 6 at the anchor-plate 3 side, and the breakage-proof nature of a sleeve 1 improves. this -- the 1st work example -- a sleeve 1 -- a miniaturization -- and-izing can be carried out [low cost].

[0025] [Modification(s)] -- although the work example of the account of a top showed the example which uses an anchor plate 3, when the surface of the stationary-portion material K is metal, an anchor plate 3 may be abolished and a sleeve 1 may be fixed to the direct stationary-portion material K. Although prepared in the taper with which the peripheral face 4b and the perimeter metal cylinder 6 of a main material 4 are turned to the anchor-plate 3 side, and an outside diameter narrows in the above-mentioned work example When hardening a main material 4 inside the perimeter metal cylinder 6, the perimeter metal cylinder 6 is formed wavelike by reducing work etc., and you may prepare so that the axial force of the hardened main material 4 may be given to the perimeter metal cylinder 6. Of course, the peripheral face 4b and the perimeter metal cylinder 6 of a main material 4 are prepared straight, and you may make it a main material 4 tell the force in which it is added to a main material 4 to the perimeter metal cylinder 6, according to the force which spreads in an outside diameter direction. A rib may be formed in the edge of the inner circumference metal cylinder 5, and the head plate 7 may be fixed to the end face of a main material 4 according to the force in which the inner circumference metal cylinder 5 is pushed in.

[Brief Description of the Drawings]

[Drawing 1] It is the perspective view of a strand anchorage device (the 1st work example).

[Drawing 2] It is the sectional view of each part article which constitutes a sleeve (the 1st work example).

[Drawing 3] It is the sectional view of a strand anchorage device (the 2nd work example).

[Drawing 4] It is the sectional view of a strand anchorage device (conventional example).

[Explanations of letters or numerals]

1 Sleeve

2 Wedge

3 Anchor Plate

4 Main Material

5 Inner Circumference Metal Cylinder

6 Perimeter Metal Cylinder

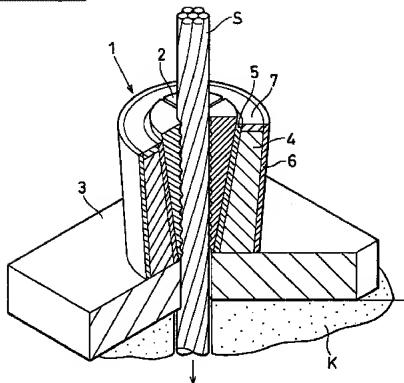
7 Head Plate

3a The tapered surface of an anchor plate

K Stationary-portion material

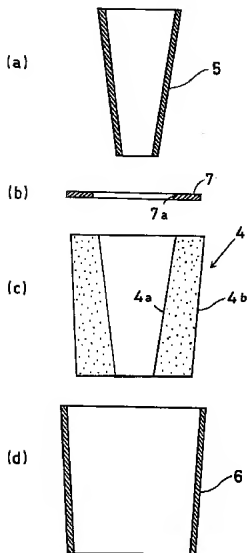
S Strand

[Drawing 1]

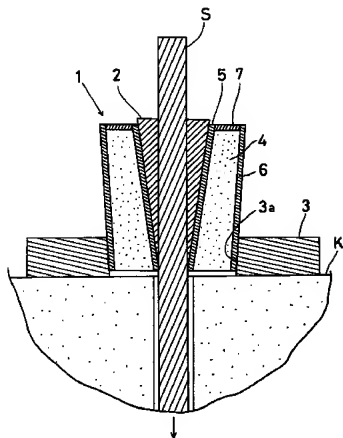


[Drawing 2]

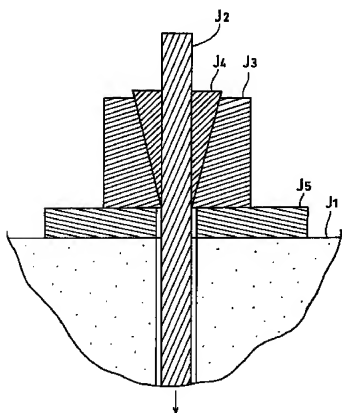




[Drawing 3]



[Drawing 4]



[Translation done.]